

REMARKS

The Office Action dated October 15, 2009 has been received and carefully noted. The above amendments to the specification and claims, and the following remarks, are submitted as a full and complete response thereto.

In accordance with the foregoing, claim 4 has been amended to more particularly point out and distinctly claim the subject matter of the invention. Support for the amended feature may be found, at least, in paragraph [0005] of the Specification. No new matter is being presented, and approval and entry are respectfully requested. As will be discussed below, it is also requested that all of claims 1-7 be found allowable as reciting patentable subject matter.

Claims 1-7 stand rejected and pending and under consideration.

AMENDMENTS TO THE DRAWING:

FIG. 9 has been labeled as “PRIOR ART,” as described in the Specification of the present application. No new matter has been added.

Accordingly, please substitute the attached Replacement Sheet containing FIG. 9 for the original sheet of this figure filed in connection with the present application. The Examiner’s approval of the attached Replacement Sheet is respectfully requested.

OBJECTION TO THE TITLE:

In the Office Action, the title was objected to as not being descriptive. In view of the amended title set forth above, the outstanding objection to the title should be resolved.

OBJECTIONS TO THE ABSTRACT:

The Office Action objected to the abstract because of various informalities. In response, the abstract has been amended to resolve these informalities. Accordingly, it is respectfully requested that the objections to the abstract be withdrawn.

OBJECTIONS TO THE SPECIFICATION:

The Office Action objected to the Specification because of various informalities. In response, the specification has been amended to resolve these informalities. Accordingly, it is respectfully requested that the objections to the Specification be withdrawn.

OBJECTIONS TO THE CLAIMS:

In the Office Action, claims 1-7 were objected to for minor informalities. In particular, claim 1 was objected to for insufficient antecedent support. In response, claim 1 has been amended to correct such minor informality. Accordingly, it is respectfully requested that the objection to the claim be withdrawn.

REJECTION UNDER 35 U.S.C. § 102:

Claims 1-3 and 7 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,407,738 to Tabata et al. (“Tabata”). The Office Action took the position that Tabata describes all the recitations of independent claim 1 and related dependent claims. It is respectfully asserted that, for at least the reasons provided herein below, Tabata fails to teach or suggest the recitations of the pending claims. Reconsideration is requested.

Independent claim 1, upon which claims 2-7 are dependent, recites a wavelength filter, including a grating in which a first portion extending in X direction on a substrate surface and a second portion, composed of a material with a refractive index higher than that of a material of the first portion and extending in the X direction along the first portion, are alternately arranged in Y direction perpendicular to the X direction on the substrate surface at a predetermined cycle Λ shorter than a wavelength of light to be used, λ . The wavelength filter is configured so that a cross-sectional figure of respective first portions in the Y direction and perpendicular to the substrate surface is provided with at least one protruding portion. The wavelength filter becomes wider in the width of Y direction than that of neighboring portions within a predetermined range of distance apart from the substrate surface by a predetermined distance in Z direction. The wavelength filter forms plural waveguide layers parallel to the substrate surface and divided by regions parallel to the substrate surface in the predetermined range of distance.

Each of the waveguide layers reflects light satisfying $\beta \equiv \frac{2\pi}{\lambda} \sin \theta + \frac{2\pi}{\Lambda}$ where θ represents an incident angle to the substrate of the light, and β represents a propagation factor of said each waveguide layers, and that wavelength bands of light reflected from the plural waveguide layers shift while overlapping with each other to reflect light with a wavelength band broader than that of light reflected from a single waveguide layer.

As will be discussed below, Tabata fails to disclose or suggest the elements of any of the presently pending claims.

Tabata generally describes a minute structure for showing colors by reflection and interference of natural light includes a plurality of fin portions and a central portion for uniting the fin portions. The fin portions are aligned in a first direction and positioned such that the adjacent fin portions are spaced from each other so as to define therebetween a void space which is filled with air. Each fin portion has a first width defined in a second direction which is perpendicular to the first direction and a second width defined in the first direction. The void space has a third width which is defined in the first direction. The central portion has a fourth width defined in the second direction. The first width of each fin portion is three times or more larger than the fourth width of the central portion.

However, Tabata does not teach or suggest a wavelength filter comprising a grating as recited in independent claim 1. Rather, Tabata provides a minute structure for showing colors by reflection and interference of natural light. Tabata does not provide

any description indicating that the fin portions would be configured to reflect light “satisfying $\beta \equiv \frac{2\pi}{\lambda} \sin \theta + \frac{2\pi}{\Lambda}$ where θ represents an incident angle to the substrate of the light, and β represents a propagation factor of said each waveguide layers,” as recited in independent claim 1. Rather, the configuration of Tabata focuses on the structural configuration of the alignment of the fin portions and the central portion uniting the fin portions. Nothing in Tabata would enable a person of ordinary skill in the art to arrive to the configuration of the reflection of light and satisfy the relationship $\beta \equiv \frac{2\pi}{\lambda} \sin \theta + \frac{2\pi}{\Lambda}$, as recited in independent claim 1. Also, Tabata does not provide a description suggesting that each waveguide lay “to reflect light with a wavelength band broader than that of light reflected from a single waveguide layer,” as recited in independent claim 1.

Furthermore, Tabata fails to teach or suggest, at least, “a grating in which a first portion extending in X direction on a substrate surface and a second portion, composed of a material with a refractive index higher than that of a material of the first portion and extending in the X direction along the first portion,” as recited in independent claim 1. Instead of providing a minute structure in which a grating includes a second portion composed of a material with a refractive index higher than that of a material of the first portion, Tabata provides that the fin portions are spaced from each other so as to define therebetween a void space which is filled with air. (Emphasis added) Tabata does not teach or suggest first and second portions with materials of different refractive indices, where one has a higher refractive index than the other material. A void space filled with

air cannot be made of a material that has a refractive index higher than that of the minute structure.

Furthermore, Tabata does not teach or suggest, at least, a wavelength filter including “at least one protruding portion ...to form plural waveguide layers parallel to the substrate surface and divided by regions parallel to the substrate surface in the predetermined range of distance, each of the waveguide layers reflecting light satisfying

$$\beta \equiv \frac{2\pi}{\lambda} \sin \theta + \frac{2\pi}{\Lambda} \text{ where } \theta \text{ represents an incident angle to the substrate of the light, and}$$

β represents a propagation factor of said each waveguide layers,” as recited in independent claim 1. Also, Tabata does not teach or suggest, at least, “that wavelength bands of light reflected from the plural waveguide layers shift while overlapping with each other to reflect light with a wavelength band broader than that of light reflected from a single waveguide layer,” as recited in independent claim 1. FIGS. 1 and 2 and corresponding description provided in Tabata are limited to describing a minute structure of rectangular in shape. Nothing in Tabata provides the thickness of the central portion 12 “Wa”, which is defined in the second direction, form “plural waveguide layers parallel to the substrate surface and divided by regions parallel to the substrate surface in the predetermined range of distance, each of the waveguide layers reflecting light satisfying

$$\beta \equiv \frac{2\pi}{\lambda} \sin \theta + \frac{2\pi}{\Lambda} \dots \text{ and that wavelength bands of light reflected from the plural waveguide layers shift while overlapping with each other to reflect light with a wavelength band broader than that of light reflected from a single waveguide layer,” as}$$

recited in independent claim 1. Although Tabata appears to vaguely indicate that the thickness of the central portion “Wa,” the length of the fin portion “Wb,” the thickness of the void space “da”, and the thickness of each fin portion “db” may take different values (See column 3, lines 30-32), that alone does not teach or suggest the particular claimed features associated with the plural waveguide layers in order to reflect light with a wavelength band broader than that of light reflected from a single waveguide layer, where each of the waveguide layers reflecting light satisfy $\beta \equiv \frac{2\pi}{\lambda} \sin \theta + \frac{2\pi}{\Lambda}$. Tabata does not enable a person skilled in the art to arrive to the particular features of the plural waveguide layers as recited in independent claim 1. Tabata does not suggest nor contemplates the features and benefits associated with the particular configuration of the filter recited in independent claim 1.

FIGS. 5-15 and corresponding description provided in columns 3 and 4 of Tabata does not teach or suggest, “wavelength bands of light reflected from the plural waveguide layers shift while overlapping with each other to reflect light with a wavelength band broader than that of light reflected from a single waveguide layer,” as recited in independent claim 1. Rather, FIGS. 5-15 of Tabata provide a general description pertaining to varying the reflectance of one or multiple fin portions. Nothing is provided in the description of FIGS. 5-10 of Tabata pertaining to wavelength bands of light as reflected from the waveguide layers and the overlapping with each other to reflect light

with a wavelength band broader than that of light reflected from a single waveguide layer as in the presently claimed application.

Lastly, FIGS. 16-21 of Tabata simply describe the effect of thickness (db) of the fin portion of reflectance. See column 4, line 38, to column 5, line 5. Nothing in this portion of Tabata provide the configuration of the waveguide layers and the overlapping of the wavelength bands as recited in independent claim 1. FIG. 25 of Tabata limits its description to shows a relation between excitation purity of a reflected color under a white light and the ratio of the length of the fin portion “Wb” to the thickness of the central portion “Wa” (Wb/Wa) and another relation between Y value and Wb/Wa. There is no teaching or suggestion providing, at least, “wavelength bands of light reflected from the plural waveguide layers shift while overlapping with each other to reflect light with a wavelength band broader than that of light reflected from a single waveguide layer,” as recited in independent claim 1.

Accordingly, Applicant respectfully submits that Tabata does not teach or suggest all the elements recited in independent claim 1 and, therefore, related dependent claims 2-3 and 7. Applicant respectfully requests that the rejection to the claims be withdrawn.

Claims 4-6 were rejected under 35 U.S.C. 103(a) as being unpatentable over Tabata. The Office Action took the position that Tabata discloses all of the elements of the claims, with the exception of the determining being based on the material as defined in claims 4-6. The Office Action then took Official Notice as allegedly curing this

deficiencies in Tabata. The rejection is respectfully traversed for the reasons which follow.

Because Tabata must teach all the recitations of the base claim and any intervening claims of dependent claims 4-6, the arguments presented above supporting the patentability of independent claim 1 over Tabata are incorporated herein to support the patentability of dependent claims 4-6. Therefore, it is respectfully requested that dependent claims 4-6 be allowed.

Furthermore, it is fundamental that rejections under 35 U.S.C. §103 must be based on evidence comprehended by the language of that section. *See In re Lee* 61 USPQ2d 1430 (CA FC 2002) (*citing In re Grasselli*, 713 F.2d 731, 739, 218 USPQ 769, 775). In the instant case, the Office Action has limited the extent of the evidence by simply concluding that “...since it has been held to be within the ordinary skill of the worker in the art to select a known material on the basis of its suitability for the intended use.” No evidence was provided in the Office Action to support such holding.

If the U.S. Patent and Trademark Office wishes to take Official Notice that the features of claim 4 reciting that “wherein the material of the first portion is any of glass, plastic or silicon,” that the features of claim 5 reciting that “wherein the material of the second portion is any of titanium oxide, magnesium fluoride or silicon oxide,” and that the features of claim 6 reciting that “wherein the material of the second portion is either germanium or zinc selenide,” are notoriously well known, Applicant respectfully requests to the U.S. Patent and Trademark Office that supporting evidence be provided. The

Federal Circuit has cautioned that an Examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed. *In re Rouffet*, 47 USPQ2d 1453, 1458 (Fed. Cir. 1998).

While “Official Notice” may be relied upon, as noted in MPEP §2144.03, these circumstances should be rare when an application is under final rejection or action under 37 CFR §1.113. According to MPEP 2144.03, “the examiner may take official notice of facts outside of the record which are capable of instant and unquestionable demonstration as being ‘well-known’ in the art,” emphasis added. However, if the Applicant, according to MPEP 2144.03 traverses such an assertion the Examiner should cite a reference in support of his or her position. In short, the rules of the U.S. Patent and Trademark Office do not allow discretion on the part of the Examiner. Accordingly, Applicant traverses the present obviousness rejection and requests that either the Examiner supports its assertion with an Affidavit or withdraw the rejection.

The outstanding rejection would appear to have taken the teachings of the present invention and applied the same to modify Tabata, as set forth in the Office Action, to then disclose the presently claimed invention. Applicant respectfully asserts that the *prima facie* burden has not been met.

In view of the foregoing, Applicant respectfully requests that claims 4-6 be allowed.

CONCLUSION:

In view of the above, Applicant respectfully submits that the claimed invention recites subject matter which is neither disclosed nor suggested in the cited prior art. Applicant further submits that the subject matter is more than sufficient to render the claimed invention unobvious to a person of skill in the art. Applicant therefore respectfully requests that each of claims 1-7 be found allowable and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the Applicant respectfully petitions for an appropriate extension of time.

Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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Enclosure: Replacement Sheet